

ARM Nauru Research Station  
Site Visit 0611N Report

Visit Duration: 24 November to 08 December 2006

Nauru Island, Republic of Nauru

# Nauru Site Visit (SV-0611N-B)

## Final Report

<b>Site:</b> Nauru	<b>Dates on Site:</b> 24 November - 8 December 2006
<b>Team Members:</b> Krzysztof Krzton Troy Culgan	<b>Required Items &amp; Other Actions:</b> <ul style="list-style-type: none"> <li>• New MPL</li> <li>• MPL spare serial &amp; USB cables (not required)</li> <li>• <i>Repaired Nera SAT phone - postponed until next site visit</i></li> <li>• TWTA</li> <li>• MWR cables &amp; connectors</li> <li>• Fire extinguishers</li> <li>• KIOSK UPS batteries</li> <li>• MMCR UPS</li> <li>• TBRG microswitches</li> <li>• Rust converter and paint for SAT antenna</li> <li>• AERI electronics rack</li> <li>• CIMEL</li> <li>• BW spare</li> <li>• <i>4 DS RHE OS HDs, ref. BCR 01142 - postponed until next site visit</i></li> <li>• 6 DS NFS Storage Array HDs</li> </ul>
<b>Task Summary:</b> MMCR TWTA change out MWR replacement CIMEL replacement MPL replacement Radiometer change out	<b>Safety:</b> Major Hazards: Caustic chemicals (KOH), Explosive gas (H2), AC electricity Hazard Controls: BOM Electrolyser Handbook, BM Electrolyser Operations/Maintenance Training, ASNZS 4836/2001-Safe Working on LV Electrical Installations, 2-man rule  <i>When replacing items (e.g., desiccant, filters, etc.), record and report the quantity of spares left on site.</i>

### SITE TASKS

High priority / usually non-routine		Low priority / usually routine		Completed
Priority	System	Date Completed (dd/Month)	Service Time (hours)	Tasks
For each priority item insert new line (row) for each date/time entry				
1	MMCR			Change out TWTA (repaired unit to be shipped from SGP)
		25-Nov	1	TWTA arrived on site after customs clearance delays
		26-Nov	3	TWTA installed but matching waveguide to fit new I/O configuration not yet possible
		27-Nov	3	TWTA installed and MMCR on, Kevin Widener informed
		28-Nov	3	perform TWTA calibration procedure
1	MMCR			Train Observers on HD swap and shipping
		6-Dec	1	Observers given instruction
2	MWR			Replace cables and connectors
		24-Nov	6	In Progress; Prepare MWR for install, check cables and verify comms: NOTE: MWR power cables provided not rated for continuous outdoor use
		28-Nov		Task complete refer instrument change out
2	MWR			Change out instrument - Contact Maria Cadeddu prior to powering up
		25-Nov	1	Maria informed by e-mail that MWR is prepared
		27-Nov	1	MWR field instrument turned on, MWR program is currently OFF but MWR computer is on to allow mentor access
		28-Nov	1	MWR in operation
3	MPL			Install new MPL (BOM to bring spare serial & USB cables)
		24-Nov	2	Prepare and check MPL prior to install
		27-Nov	4	Installed MPL 108, Mentor informed
4	DS			Install 4 upgrade RHE OS HDs (per BCR 01142) - <i>postponed until next SV</i>

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		28-Nov	1	RHE HD's for Nauru are not ready and have not been shipped
4	DS			Upgrade NFS Storage Array HDs
		28-Nov	3	Worked with Ron Reed to install new storage Array HD's
5	AERI			Replace electronics rack
		25-Nov	4	Electronics rack replaced and 3rd blackbody test performed with old blackbodies
6	AERI			Replace rain sensor
		25-Nov	1	Rain Sensor replaced
6	AERI			Replace blackbodies with freshly calibrated blackbodies
		26-Nov	3	Blackbodies replaced with calibrated blackbodies and 3rd Blackbody test performed
		2-Dec	1	AERI mentor satisfied with 3rd blackbody results
		5-Dec	1	AERI UPS batteries replaced
6	CIMEL			Change out CIMEL
		26-Nov	2	Prepare for CIMEL change out, Attempt to establish communications via fibre converters successful
		27-Nov	3	Conduit trench dug and cables installed in preparation for CIMEL install
		29-Nov	2	CIMEL installed and communications verified to CIMEL computer in D-Van using spare fibre optic from SKYRAD stand. Mentor informed.
		30-Nov	2	CIMEL leveled and GOSUN alignment performed. Rain sensor cleaned. Mentor informed
		2-Dec	1	Cimel communications correct, equipment downloading data to computer in auto
6	CIMEL			Connect CIMEL directly to DC power or AC converted power (not solar - if possible)
		27-Nov	1	Cable installed in preparation for direct DC power connection
		29-Nov	1	Cimel connected to 12 Vdc from SKYRAD stand
6	CIMEL			Install data cable to new CIMEL PC in E-Van to enable internet data transmission (not GOES)
		26-Nov	1	CIMEL GX 270 computer installed in D-Van
6	CIMEL			Change out solar panels
		29-Nov		Not required as CIMEL being powered by DC from SKYRAD stand
7	OTHER			Change out Kiosk UPS batteries
		6-Dec	2	UPS batteries changed out
7	LGR			CAL - Verify quantity and serial numbers of spare loggers
		5-Dec	1	Complete Audit-out
8	PSP-G (SKY)			CAL - Replace SKYRAD PSP (existing spare will remain on site)
		3-Dec	1	PSP replaced
		4-Dec	1	Replaced ventilator fan
8	BW-D (SKY)			CAL - Replace SKYRAD B&W
		3-Dec	1	B&W replaced
		4-Dec	1	Replaced ventilator fan
8	NIP (SKY)			CAL - Replace NIP
		3-Dec	1	NIP replaced
8	PSP (GND)			CAL - Replace GNDRAD PSP
		3-Dec	1	PSP replaced
8	TRH (SMET)			CAL - Compare T/RH sensor

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		1-Dec	1	T/RH calibration check complete
8	WND (SMET)			CAL - Compare anemometers
		1-Dec	2	Anemomometer calibration check complete, lower wind anemometer replaced due failure in calibration check on wind speed
8	ORG (SMET)			CAL - Compare ORG
		1-Dec	1	Org calibration Check complete
8	Barometer (SMET)			CAL - Compare Barometer
		1-Dec	2	Barometer calibration Check complete, barometer replaced due to poor result in comparison approx 1.5 hPa Low
8	IRT (SKY)			CAL - Compare SKYRAD IRT
		24-Nov	4	Fault find IRT problem; Found corrosion in IRT cable connector. Replaced IRT cable assembly and verified IRT serial number 868 installed fault repaired 24 Nov 01:50 utc
		25-Nov	2	Further investigation of IRT problem after fault re-occurred when rain was evident, no conclusive result. (connectors were dry when inspected)
		26-Nov	1	Noted this morning after rain that PIR readings were inconsistent, still working on solution
		27-Nov	3	Inspected cleaned all logger connections and replaced all radiometer cables
		28-Nov	2	Both IRT 868 and 866 have faults, the fault being that there is a voltage difference between negative and case causing the output (although correct) to outside the 0-10 volt input range of the logger.
		5-Dec	1	IRT comparison to blackbody complete, IRT 867 installed
8	IRT (GND)			CAL - Compare GNDRAD IRT
		5-Dec	1	IRT comparison to blackbody complete
8	CEIL			CAL - Calibrate Ceilometer (Tip and aim at trees if possible)
		29-Nov	3	Fibre communications restored to ceilometer, temporary serial cable removed.
		30-Nov	1	Unable to check calibration as nearest object is approx 45 meters from ceilometer with a height of only 3 meters
				Complete recommend removal from Nauru calibration tasks
9	CAL			Record new configurations and send them to Bill Porch
		3-Dec	1	New configurations sent to Bill Porch
9	CAL			Fill out calibration/replacement records and send them to Bill Porch
		3-Dec	2	Calibration records/replacement records forwarded to Bill Porch
9	OTHER			Replace Leibert UPS Batteries
		25-Nov	4	I-Van and Spare Leibert UPS batteries replaced
		26-Nov	3	D-Van Leibert UPS batteries replaced, E-Van Leibert UPS replaced: Due to a shortfall in battery quantity the batteries initially used in the spare went to the E-Van. Status: I-Van,D-Van E-Van UPS batteries replaced, Spare Leibert has old batteries
				Complete
9	OTHER			Complete Audit-out form send it to Bill Porch
		5-Dec	2	In Progress

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		7-Dec	1	Complete Audit-out form sent to Bill Porch
9	OTHER			Inspect LICOR site
		30-Nov	2	LICOR site inspected, communication cable requires repair
		2-Dec	2	Rectify communications cable to facilitate data download
				Complete
10	TBRG			Connect AWS TBRG to SMET data logger
		29-Nov	2	Cable in place but not yet terminated
		30-Nov	1	Cable terminated and tip test performed, mentor informed
		30-Nov		Complete
11	COMM			Replace Nera SAT phone - <b>postponed until next SV</b>
12	H2GEN			Electrolyser maintenance (Culgan)
		2-Dec	2	RBL release cable replaced, old cable broken
		3-Dec	5	In progress
		4-Dec	4	Electrolyser maintenance complete RBL maintenance in progress
		6-Dec	2	Maintenance complete
13	POWER			Survey power strips for hazard(ie. >8amp, connected in series, etc.)
		1-Dec	6	Survey of power strips in progress, hazards identified in survey have been removed. ( Observer computer power supply changed to operate on 110volt thus removing 110-240 volt transformer from power strip fed from E-Van UPS)
		7-Dec	1	Surveycomplete no report to submitted
13	OTHER			Replace instrument PCs w/ new Dell GX620s (CEIL, Loggernet, TSI, MWR, MPL, SAM, BBSS) - <b>postponed until SV-0704N</b>
13	AWS			Calibrate AWS as per BOM calibration procedures
		1-Dec	2	AWS calibration check complete
13	ALL SYSTEMS			Perform routine maintenance as outlined in Maintenance Checklist - Send completed checklist to Monty Apple
		6-Dec	3	In Progress
		7-Dec	1	Complete
13	HVAC			Pressure-wash coils on exterior units
		7-Dec	2	Observers completed under direction
13	GENSET			Obtain oil sample for testing
		6-Dec	1	Sample Obtained
13	ESH			Change out fire extinguisher in AERI Van
		7-Dec	1	Extinguisher replaced
13	ESH			Install new defibrillator pads (located next to machine)
		3	1	Installed new pad, only one on shelf
13	ESH			Train Observers on use of defibrillator machine
		5-Dec	2	Observers given instruction
13	ESH			Put laser caution labels on MPL and Ceilometer
		30-Nov	1	Laser caution labels installed
13	ESH			Remove temporary security lighting and cable
		30-Nov	1	Unsafe cabling removed
13	MMCR			Determine antenna heater power supply requirements for purchase of spare - Determine voltage and current on existing unit (brand and model if available)
		6-Dec	1	Krzton checked and to email report to M.Apple

## SITE TASKS

High priority / usually non-routine

Low priority / usually routine

Completed

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13	DS			Change out BIOS batteries in collector and NFS server, and then reset BIOS
		29-Nov	1	Delayed until install of RHE
14	OTHER			Check operation of Observer Computer
		5-Dec	1	Observers computer checked
14	OTHER			Remove Emwin and Qfax computers, cabling and antenna
		30-Nov	2	All equipment and associated cabling removed
14	OTHER			Repair security lighting H-Van and water pump power connection
		30-Nov	2	Security lighting and power connection to water pump repaired
15	OTHER			Remove WD property tag (WD22794) from IBM 380XD laptop and send it to J. McKinney at PNNL - Make sure HD has no information prior to removal of tags
		7-Dec		Brinkman informed tag damaged in removal process, complete
14	OTHER			Remove Trimble GPS receiver and ship back to SGP
		8-Dec	1	GPS receiver removed and observers requested to ship receiver to SGP
16	SHIPPING			List items to be shipped following visit
		6-Dec	packed	Ship Cal kit to Darwin
		27-Nov	shipped	Ship MWR #15 to SGP for upgrade (if changed out)
		28-Nov	shipped	Ship old MPL to SGP
		6-Dec	packed	Ship old CIMEL to SGP
		28-Nov	packed	Ship replaced TWTA to SGP
		6-Dec	packed	Ship replaced radiometers to SGP
		28-Nov	packed	Ship replaced AERI electronics rack to SGP/U of Wisc for upgrade
17	FUTURE NEEDS			List items needed for future visits (spares, etc.)
				RBL release cable spare
				KOH for electrolyser
				Emergency Lighting fluoro tubes